CASE REPORT

Spontaneous pneumomediastinum in a marathon runner

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A previously healthy 19 year old male presented to the emergency department complaining of soreness in his neck, difficulty taking a deep breath, and a ''crinkly feeling'' in his neck and upper chest after running a marathon. He was diagnosed with spontaneous pneumomediastinum. He did not require any intervention or hospitalisation and made a full recovery.

Pneumomediastinum associated with athletic activity has been reported. However, spontaneous pneumomediastinum appears to be rare and not previously reported as a complication of distance running.

CASE REPORT

A previously healthy 19 year old male presented to the emergency department complaining of soreness in his neck, difficulty taking a deep breath, and a ''crinkly feeling'' in his neck and upper chest. Two days previously he had run his first marathon and the symptoms began several hours after the race. He denied trauma or anything unusual, stating he completed the marathon without significant difficulty in less time than anticipated.

He reported that touching his neck, taking a deep breath, and certain movements exacerbated the soreness in his neck. He denied difficulty swallowing, shortness of breath, or feeling he could not get enough air. He stated that all of the symptoms had improved since they began 2 days earlier.

At the time of presentation, he was taking no medications and was allergic to codeine. Past medical history and family history were non-contributory. He denied use of tobacco, alcohol, or drugs. He was a full time student studying psychology at a local university.

Physical examination revealed a healthy appearing male in no acute distress. Initial vital signs included a blood pressure of 121/68, a temperature of 36.5℃, a pulse rate of 51, a respiratory rate of 18, and an oxygen saturation of 100% breathing room air.

Examination of the head, eyes, ears, nose, and throat was unremarkable.

There was crepitus of the anterior neck at the level of the thyroid cartilage, extending posteriorly on both sides to the trapezius muscles and inferiorly to the anterior chest just below the clavicles; the crepitus was greater on the right than left side of the chest. The trachea was mid-line.

Auscultation of the heart revealed bradycardia and normal heart sounds without ectopy. Examination of the lungs demonstrated crepitus anteriorly, right greater than left, with good air entry bilaterally. The abdomen was soft, non-tender, and non-distended without masses. The extremities were unremarkable with symmetric pulses and no oedema. The neurological examination was normal. No other abnormalities were noted on physical examination.

Plain radiographs of the chest and neck showed pneumomediastinum with subcutaneous emphysema in the soft tissues of the neck and right side of the chest tracking cephalad through the fascial planes of the neck including the retropharyngeal space. The lungs were clear with no pleural effusion, pulmonary oedema, or pneumothorax (figs 1 and 2).

Computed tomography of the chest and neck obtained the same day demonstrated extensive pneumomediastinum with gas extending into the neck, anterior chest wall, and epidural space. There was a small linear gas collection extending along the right mainstem bronchus. The oesophagus, trachea, and lungs appeared normal with no evidence of pneumothorax.

The patient was discharged home without intervention and scheduled to follow up in 72 h.

The patient returned as scheduled and reported feeling much better with no chest pain or shortness of breath. He was able to take a deep breath without difficulty and his vital signs and physical examination were normal.

Plain radiographs of the chest and neck taken at that time showed that the previously noted pneumomediastinum and chest wall subcutaneous emphysema had nearly completely resolved with only minimal residual emphysema in the upper mediastinum and base of the neck, as well as overlying the right scapula.

The patient was discharged home and made a full recovery.

PNEUMOMEDIASTINUM

Pneumomediastinum typically results when rupture of alveoli allows free air to track along the perivascular sheaths entering the mediastinum at the hilum. Other causes include perforation of the oesophagus, trachea, or bronchi. It may occur with or without underlying lung pathology and may be spontaneous or traumatic. The most common presenting symptom is chest pain.

Pneumomediastinum associated with athletic activity has been reported. However, spontaneous pneumomediastinum appears to be rare and not previously reported as a complication of distance running.

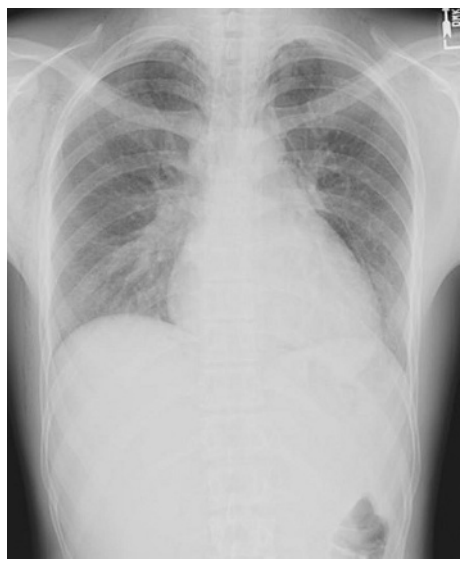

Figure 1 Radiograph of patient's chest.

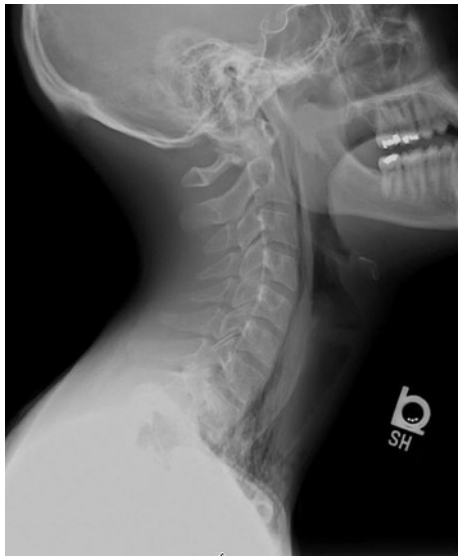

Figure 2 Radiograph of patient's neck.

Traumatic pneumomediastinum has been reported in three football players (one after tackling the ball carrier, one after receiving a shoulder tackle, and one after sustaining a blow to the chest by an opponent's helmet) and in a soccer player kicked in the midsternal area with the ball from about 10 feet away.[1–3] It has also been reported in a hockey player, with a concurrent pneumothorax, after being hip-checked.[4]

Spontaneous pneumomediastinum has been reported in a swimmer, a collegiate volleyball player, and a rugby player after a strenuous workout.[3 5 6] It has also been reported in a cricketer with concurrent bilateral pneumothoraces.[7]

What is already known on this topic

- Pneumomediastinum may occur with or without underlying lung pathology and may be spontaneous or traumatic
- The most common presenting symptom is chest pain
- Traumatic pneumomediastinum has been reported as a complication of football, soccer, and hockey
- Spontaneous pneumomediastinum has been reported as a complication of swimming, volleyball, and cricket
- In all published cases of sports related spontaneous pneumomediastinum, the athletes made a full recovery without intervention

What this study adds

- Spontaneous pneumomediastinum appears to be rare, and not previously reported as a complication of distance running
- Spontaneous pneumomediastinum is a potential complication of distance running
- Similar to other athletes with spontaneous pneumomediastinum and no underlying pulmonary pathology, distance runners generally do not require hospitalisation and may return to athletic activity without restriction following recovery

To the author's knowledge, this is the first reported case of spontaneous pneumomediastinum in a distance runner. Spontaneous pneumothorax in a jogger has been reported.[8]

In all published cases of sports related spontaneous pneumomediastinum, the athlete made a full recovery without intervention. This supports the findings of Panacek *et al* who examined a retrospective case series of 17 patients with simple spontaneous pneumomediastinum, found they had a very benign course, and concluded that they did not require intervention or hospitalisation.[9]

Spontaneous pneumomediastinum is a potential complication of distance running. Similar to other athletes with spontaneous pneumomediastinum and no underlying pulmonary pathology, distance runners generally do not require hospitalisation and may return to athletic activity without restriction following recovery.

Competing interests: none declared

Informed consent was obtained for publication of the person's details in this report

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COMMENTARY

This is an interesting example of spontaneous pneumomediastinum (SPM) that occurred following marathon running. A few cases of SPM from running have been reported in the literature but have only been mentioned as part of a series without any case write up. This report shows that SPM is typically benign and responds to conservative treatment. Outpatient management was successfully utilised in this case as suggested in the literature (*Ann Emerg Med* 1992;**21**:1222–7), although the 2004 and 2005 literature recommends at least observation for a short period of time. As a review in *Chest* 2005;**128**:3298–302 found that one out of 18 patients with SPM developed a complication requiring intervention, some inpatient period of observation is warranted even though investigation is otherwise benign (for example, admission to an observation ward for 6–24 h). Oxygen therapy has also been typically utilised to cause ''nitrogen washout'' and aid resolution of the condition. It should be noted, however, that all these SPM case series which recommend admission and observation are retrospective reviews and, therefore, are probably biased towards inpatient care and treatment of the most severe cases.

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